

MARINE VESSEL ONBOARD WASTEWATER TREATMENT SYSTEM

ABSTRACT OF THE DISCLOSURE

Shipboard wastewater undergoes treatment within an automatic system based on membrane bioreactor technology. Bacteria that are naturally present in the raw waste stream break down and consume organic material in the wastewater. Membranes in the bioreactor provide a physical barrier, retaining the bacteria and other solids while producing an effluent sufficiently clean to be discharged directly overboard. To ensure adequate treatment, a flow-through ultraviolet disinfection unit is employed in the system downstream of filtration. Inorganic and other non-biodegradable material that accumulates in the bioreactor with time is removed automatically to maintain the desired solids concentration in the bioreactor. Using selective control established through the operator interface, the system can be operated under automatic process/standby mode or maintenance mode, and sludge concentrate can be directed either overboard, to an onboard storage tank, further treatment within a concentration device or destruction within an incinerator for example, depending on the ship's equipment, location and operating conditions.